4.0 NEW ANALYSIS

4.1 INTRODUCTION

Chapter 4.0 includes new analysis for agricultural impacts, a change from EIR 564; and Global Climate Change (GCC), an environmental parameter that was not required at the time EIR 564 was certified.

4.2 AGRICULTURE

4.2.1 Background

JAMF was originally established in 1964 as an "honor farm" pursuant to California Penal Code Section 4100, which under the intent of that section, was a farm for inmates to work off sentences through agricultural labor that was thought to be rehabilitating. Because there were active agricultural operations on a large part of the site, when the State Department of Conservation Farmland Mapping and Monitoring Program took inventory of agricultural resources, areas in production were coded as such. Of the original 100 ac parcel, 55 ac were coded as "Prime" Farmland on the state's Map of Important Farmland. The remaining 45 ac were coded as Urban & Built Up. The boundary roughly bifurcates the site, as shown on Figure 4-1.

At the time EIR 564 was certified (1996), JAMF had active agricultural and animal ranching activities on site that supplemented the food preparation for the jail population and provided an activity for inmate participation. Historically, crops cultivated at the site provided food for the jail, juvenile justice, and Orangewood Children's Homes systems. These resultant crops from activities were projected to be a cost offset to operational costs at JAMF. In 2000, the administrative costs to run the agricultural operations started increasing and cutting into the cost offset. Later, more restrictive laws on animal keeping resulted in the elimination of the ranching activities, further reducing the offset benefits of these operations. Agricultural programs at JAMF were discontinued in 2009 due to budget constraints (the staff positions were reassigned to other jail operations).

In the JAMF Master Plan EIR 447 (1986), the loss of agricultural lands is discussed in Section 4.6, Natural Resources, beginning on page 4-15. This section acknowledges that the majority of the site (65 ac) was in agricultural production at the time the 1986 EIR was prepared and that all the agricultural land would be lost at ultimate build out of the project. The EIR acknowledged a plan to lease or purchase 20 ac of MCAS El Toro directly north of the site but did not take credit for mitigation for this plan. The EIR offered no mitigation for the loss of agricultural lands and acknowledged the loss of 65 ac of Prime Agricultural land as an unavoidable adverse impact. The Board of Supervisors made appropriate findings for this impact and adopted a Statement of Overriding Considerations. The 1986 Musick Facility Master Plan EIR 447 was certified and was never challenged in court.

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SOURCE: AirPhotoUSA

LEGEND

- Urban and Built-up Land
- Prime Farm Land
- (1) - County-owned Water System
- (2) - Agricultural Expansion Areas

FIGURE 4-1

Musick Jail Expansion

EIR 564 Agricultural Expansion Areas

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4.2.2 Agricultural Impacts Discussed in EIR 564

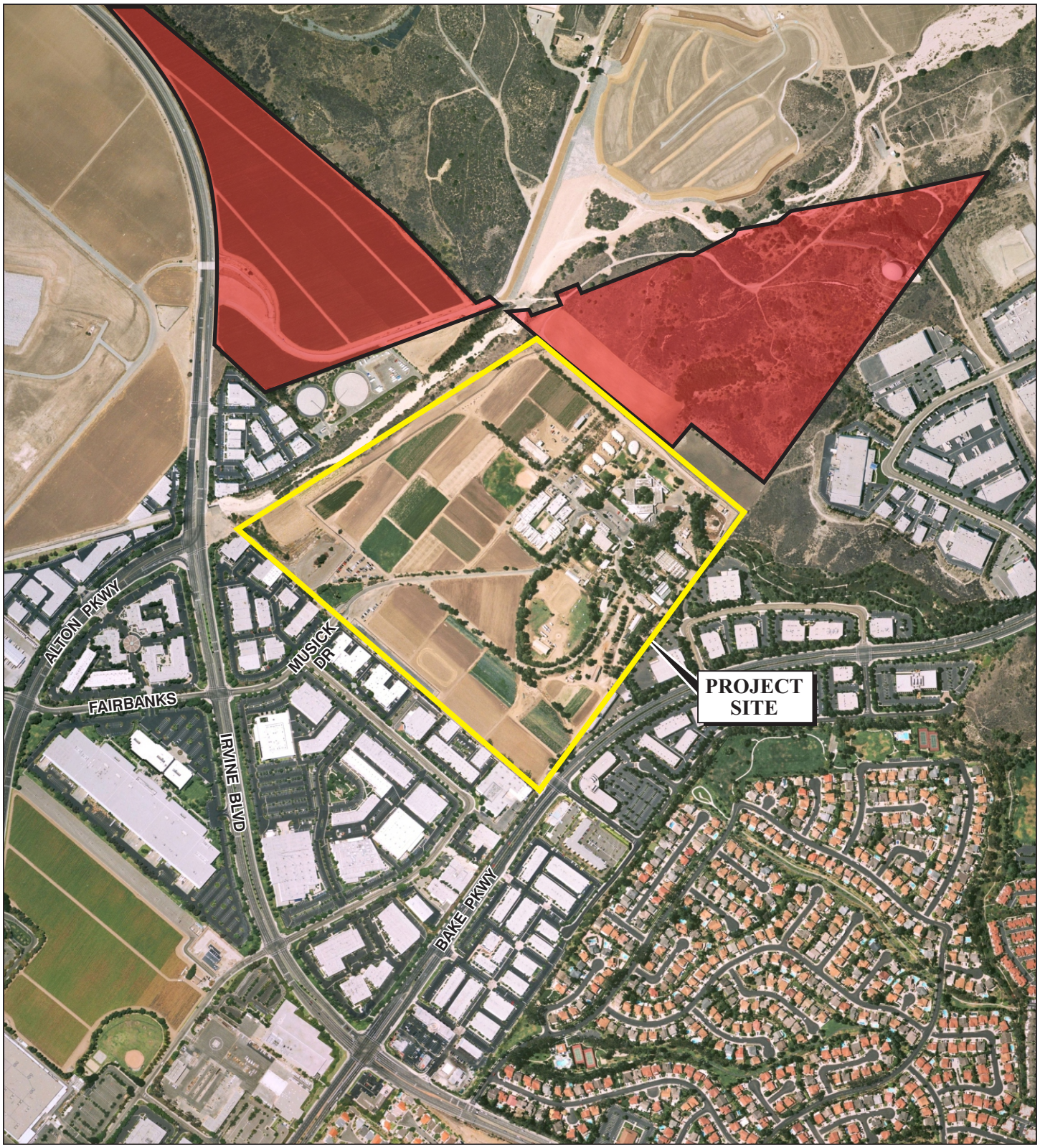
JAMF Master Plan and Section 5.1, Landform, Soils, and Geology. EIR 564 notes that the JAMF Master Plan was designed to allow a 22 ac agricultural area that would also provide a development buffer necessitating some of the new structures to be placed in the center of the site (refer to Figure 3-8). In addition, a 12–15 ac agricultural expansion area abutting the northeast boundary was planned (refer to Figure 4-1). Another agricultural area was to be pursued on the MCAS El Toro site in the area just north of the agricultural expansion areas (refer to Figure 4-2), although the viability of the acquisition was not certain, as noted in EIR 564 (total off site agricultural acreage including the 12-15 ac agricultural area and excluding Alton Parkway right of way is approximately 77 acres). However, the area abutting the JAMF site to the northeast has hilly topography with limited agricultural opportunities as well as coastal sage scrub, the habitat of the California gnatcatcher, a "threatened" species under the Federal Endangered Species Act (refer to Figure 4-3). The discussion of agricultural impacts appears on page 58 of EIR 564 and reads as follows:

> There would still be a loss of prime farmland, however, to the extent of approximately 33 acres in the buildout condition. The loss of this agricultural land on the Musick site has already been considered in Final EIR 447 (1986) for the earlier Musick Jail proposal. To the extent that there are impacts from the current proposal, as to agricultural land they are no different than those of the 1986 proposal. Therefore, CEQA §21166 allows reliance on that prior EIR for impact assessment.
>
> It is not believed that the impacts will be significant in the area of agricultural uses in any event. The "exchange" of land within the site, as well as the FEIR 447 proposal to expand Musick agricultural uses to 12 to 15 acres north of the current site (now military base land), compensates for any loss. The NCCP (Natural Communities Conservation Plan) EIR and Plan actually accommodates agricultural uses on 12 to 15 acres north of the site. Therefore, no significant impacts or conflicts with either agricultural uses or resource protection policies will occur as a result of this project.
>
> Another offsetting factor is that the Local Redevelopment Agency (LRA) has recently recommended the approval of a conveyance of 40 acres of agricultural use on the MCAS El Toro to the north and west of this site (of which 12 to 15 acres is the land referred to in the preceding paragraph). This acreage, taken together with the 20+ acres to be provided on the Musick site, exceeds the acreage occupied by the new buildings.

Also, Mitigation Measure No. 43a was added through the Responses to Comments for EIR 564 and was incorporated into the Mitigation Monitoring and Reporting Program. Mitigation Measure 43a reads as follows:

> 43a. *Prior to the commencement of construction of any building shown for the site, the County of Orange shall record a buffer area which prevents construction of any non-agriculturally related buildings, and preserves this area as a buffer.*[1]

[1] It should be noted that Mitigation Measure 43a was added to the mitigation measures for land use, but does not correspond to a potential significant effect to land use. It was incorporated at the suggestion of the City of Lake Forest's comments on DEIR 564, Comment and Response No. 125 of FEIR 564.



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LEGEND

- Mitigation Sites

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SOURCE: AirPhotoUSA

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FIGURE 4-2

Musick Jail Expansion

Off-site Mitigation Area

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FIGURE 4-3

Musick Jail Expansion

Northeast Mitigation Area

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At the time these commitments were made, it appeared that agricultural operations on the JAMF site and in the surrounding area would be preserved as part of the Airport Master Plan. As time has shown, agricultural operations in Orange County remain on the decline, and the majority will be phased out in the future and replaced with new development.

The Appellate Court ruled that EIR 564 adequately disclosed the project's impact on the site's agricultural activity and that it properly relied upon the findings in the 1986 Musick Facility Master Plan EIR 447 to support the analysis in EIR 564. The Court found that even though the 1996 Master Site Plan in EIR 564 was substantially different from the one in the 1986 Master Facility Plan EIR 447, because both involved expansion of the JAMF and the same site, the approach and level of discussion complied with CEQA, specifically PRC Section 21061 and CEQA Guidelines Section 15150, subds. (b) and (c). (See Opinion, pages 6 through 9, Fourth District Court of Appeal for the State of California, Division Three, dated December 8, 2000, in the case of *City of Lake Forest, et al., v. County of Orange*, Case No. G023884, Orange County Superior Court Case No. 772442, incorporated by reference herein; refer to Appendix A.)

Also, while EIR 447 disclosed the wholesale loss of the entire 55[1] ac of agricultural lands at JAMF and the Board of Supervisors made the appropriate findings to do so, EIR 564 altered that conclusion by stating that 22 ac of agricultural operations would be preserved on site. There are currently no active agricultural operations at JAMF, and there are no plans to have Sheriff-run agricultural operations in the future based on budget constraints associated with the staff costs of running the agricultural programs.

EIR 564 Cumulative Agricultural Impacts. In addition, in Chapter 8 (Cumulative Impacts) of EIR 564, the following statement is made:

> The only other consideration is with respect to agricultural land. On the one hand, the loss of a net of 33 acres of land on the Musick site (55 acres offset by 22 relocated acres) is a small regional loss, and is also offset by the recommended conveyance of 40 acres of agricultural land through the Reuse Plan. On the other hand, all but 12 acres of the 40 acres are actively farmed now. Therefore, there is a net cumulative loss of 21 acres for the Musick site. The Reuse Plan proposes the development of much of the currently farmed land on the base, In contrast, the loss of farmland on the Musick site is quite small, individually and cumulatively, to that experienced under the Reuse Plan. The Reuse Plan EIR discusses this loss and does not find that the Musick acreage loss contributes significantly to the overall loss of agricultural land. Therefore, while a loss, this impact is not considered cumulatively significant.

EIR 564 Facts and Findings. The Facts and Findings for EIR 564 related to Landform, Soils and Geology (page 12) concluded:

[1] EIR 447 addressed impacts to 65 acres of agricultural operations. By the time EIR 564 was prepared, there was less acreage in production and so the impact was to 55 acres of lands designated as Prime Farmland.

> As to agricultural land, the loss is considered insignificant on its own merits and due to the previously approve 12 to 15-acre expansion to the north. The Land Use section also adds a measure protecting the on-site agricultural buffer in perpetuity.

EIR 585 Agricultural Impacts. EIR 585 for the Alton Parkway Extension acknowledges the loss of 0.6 acres Prime Farmland on the JAMF site. However, based on updated land survey information, Alton Parkway reduced the JAMF site from approximately 100 acres to approximately 94 acres in a Prime Farmland area. Therefore, EIR 585 underestimated the level of impact to Prime Farmland in its analysis. Thusly, this Supplement to EIR 564 acknowledges the impacts to the 6 acres of Prime Farmland that should have been noted in EIR 585 associated with the right-of-way acreage reduction to the JAMF parcel. Therefore, no changes to the total of 55 acres of impacts to Prime Farmland is noted even though the JAMF site has been reduced in size by 6 acres on the western boundary along Alton Parkway.

4.2.3 New Agricultural Impacts

As prescribed by CEQA Guidelines Section 15162(a)(2), the proposed Revised JAMF Master Plan does have new circumstances that result in new significant impacts. As discussed earlier in Chapter 3 of this Supplemental EIR, an agricultural buffer is no longer proposed for the Revised JAMF Master Plan, and agricultural operations are not anticipated to be continued in the future. Therefore, the following impacts are noted based on the elimination of agricultural operations and land uses proposed in the revised Master Plan:

- The loss of 55 ac of Prime Farmland
- The elimination of agricultural uses and buffer at JAMF
- The cumulatively significant contribution of 55 ac of Prime farmland reduction in Orange County
- The cumulative contribution to the reduction of agricultural activities in Orange County as a whole

With the conversion of MCAS El Toro to civilian uses, areas that had impediments to development (i.e., lack of infrastructure or accessibility) will have fewer impediments as the Great Park develops and underserviced areas around the former base gain access to new infrastructure and accessibility. This impact was noted in the Great Park EIR, certified in 2003 (pp. 7-14):

> The reduction of land in the project area in agricultural production will have the indirect effect of increasing development pressure and accelerating the loss of the remainder of the agricultural land within the area. A net decrease in farmland under cultivation in an area has a consequent increase in agricultural production costs such as transportation and labor. Agricultural activities tend to be incompatible with urban and suburban neighbors because of factors such as dust, odors, pesticide use and machinery noise associated with normal farming operations. Farmers may also experience increased costs associated with garbage dumping on their property, theft of produce and equipment, vandalism of equipment, and increased traffic on roads use to move equipment between fields. Development within the project area may

> reduce the attractiveness of continued production on nearby farmlands, and may increase the financial rewards of taking land out of agricultural use.
>
> However, conversion of agricultural land to urban uses is a long and continuing trend in Orange County. Though it is difficult to quantify the amount of agricultural land that is under development pressure within the County, it is unarguable that such pressure exists and will continue with or without implementation of the proposed project. As a result, while there are existing pressures that would result in the conversion of agricultural land within and adjacent to the project area with or without the implementation of the proposed project, it is expected that the conversion of agricultural land within the project area will serve to indirectly promote the conversion and development of agricultural land within the area.

The same trend was also discussed in Recirculated EIR 564 on page 28, which states the following:

> As stated above, conversion of agricultural land to urban uses is a long and continuing trend in Orange County. While not within the scope of this document to quantify the amount of agricultural land which is under pressure to be converted to urban uses in Orange County and the remainder of southern California, it is highly likely (and probably certain) that such cumulative development pressure exists and will continue with or without implementation of the project. The conversion of agricultural land to urban uses is an important policy decision which is ultimately left to each local jurisdiction. The loss of agricultural land in Orange County is considered a significant impact, whereas, it may not be considered a significant impact in another jurisdiction.

4.2.4 Mitigation

Agricultural resource mitigation is a challenging topic. In Orange County, a vast majority of agricultural resources have been displaced by urban development. That trend is anticipated to continue in the future, with most agriculture being phased out. In 1998, the County analyzed possible mitigation for loss of agricultural lands in the Recirculated Sections of EIR 564. The County completed the Recirculation based upon the adverse Superior Court decision, not knowing whether the Court of Appeal would uphold or reverse the trial court, and performed analysis regarding possible mitigation for agricultural land loss as originally ordered by the trial court. That analysis is reiterated below with some minor updates, and analysis of the feasibility of mitigation remains applicable to the Revised JAMF Master Plan and the elimination of agricultural uses on the site.

1. Conveyance of 40 Acres in the El Toro Reuse Area

Prior to July 1, 1999, the County shall use its best efforts to secure the conveyance of the 40 ac in the El Toro Reuse Area to the County for the intended agricultural purposes. The Board of Supervisors, through the El Toro Master Development Program, shall ensure that these lands, if conveyed to the County by the Department of the Navy, will be made available for use by the Sheriff's Department for agricultural purposes.

For purposes of this mitigation measure, the cultivation of these lands may occur in staged increments commensurate with the expansion of the jail, laundry, or Sheriff's station, so long as the amount of cultivated agricultural land lost on the jail site is offset by an equal or greater amount of land cultivated in the immediate area.

Analysis of Mitigation Measure 1. Although the County owns the subject parcels, due to changes in circumstances (e.g., cost of staffing agricultural operations), the County plans to convert the lands into other land uses.

2. County Purchase of Off-Site Agricultural Lands

At the time of the commencement of each phase of the jail expansion, the County shall acquire lands in the amount of mapped land lost in that phase for a total of 55 ac for all phases. Therefore, under this mitigation measure, the County would commit to the acquisition of off-site prime agricultural land in the total amount of 55 ac. The County shall devote these lands to cultivation for the life of the jail project. These lands may either be cultivated by the County, or leased to others for cultivation.

Analysis of Mitigation Measure 2. This mitigation measure is not recommended for adoption for the following reasons:

The cost of acquisition of such land is very high. The County would need to seek off-base lands, which are not proximate to the jail site and are privately owned. At a minimum cost of $378,000/ac,[1] the acquisition cost of these lands would be approximately $20.8 million for the loss of the 55 ac.

This acquisition cost of $16.5 million appears to be infeasible based upon fiscal considerations. The County's General Plan, Public Services and Facilities Element (page PSF 3-1), has acknowledged that, since the late 1970s, the County and all other local governments have faced significant fiscal constraints resulting from revenue reductions and spending limitations. The County's bankruptcy proceedings highlight the major fiscal issues that constrain the County's ability to provide for public services, programs, and facilities. In summary, the significant fiscal constraints include:

(a) The passage of Proposition 13 in 1978 seriously limited local property taxes as a major revenue source for counties and other local governments. In fiscal year 1974–1975, property taxes provided 35 percent of the total County revenues and 24 percent of city revenues. With the annexations of unincorporated areas into cities, revenue property tax revenue from the County is not expected to provide additional funding to pursue off-site agricultural properties. In addition, the County has never opted to preserve or reserve agricultural lands to abate the loss of agricultural lands as a policy.

(b) In the past, general obligation bonds were used extensively to finance certain capital improvements and other programs. Proposition 13 has inhibited the ability of local governments to raise property tax revenues to meet financial obligations by requiring a positive two-thirds vote of the qualified electorate. These factors have seriously limited the ability of local governments to

[1] 2011 estimate of per-acre land value at the Musick property (source: AB900 Phase II Staff Report).

issue general obligation bonds. The reduction in bonding capability for certain capital improvements and other programs necessarily means that fewer discretionary funds are available to finance other competing programs, including acquisition and preservation of important agricultural lands in central and southern Orange County.

(c) Federal and state assistance has been a prime component in both state and local budgets, accounting for 20 to 25 percent of these budgets, particularly since the late 1960s. Significant budget cuts have been implemented over the last several years to reduce assistance to local governments. Although many of the cuts affect social programs, they also affect the County's ability to divert discretionary funds to competing public services and programs, including acquisition and preservation of important agricultural lands in central and southern Orange County. With the recession and dissolution of State Redevelopment funds, the County has even fewer resources available for such acquisitions.

In addition, the County does not maintain an agricultural division devoted to cultivation of agricultural lands that is not associated with the Musick jail system. This means that minimum security inmates would have to be transported to the agricultural fields for labor. This increases the risk of escape due to the distances over which inmates must work to effectively cultivate the field. This also requires additional security and supervision staffing. There is also a minor impact in the area of air quality due to the need to transport the inmates off the Musick Jail site. Four trips daily would be necessary due to the necessity to return inmates to the jail for a noon meal. The Sheriff's Department would also be required to purchase street-legal vehicles and pay license fees for the transportation of inmate labor and of the harvested crops, etc.

The County also has no ready means to acquire such lands except by an "arm's length" transaction with a nearby property owner. Exclusive of the Reuse Plan area, the nearest large property owner to the jail site owning agricultural lands is The Irvine Company. Condemnation against this entity would be problematic, as it would be difficult to establish the requisite showing of public need and necessity. Furthermore, most of the land owned by this entity in the vicinity of the Musick Jail site is contemplated for development. Therefore, the acquisition costs would be expected to be very high. In addition, there would not be any net increase in the total amount of agricultural land that would be preserved if the land could somehow be acquired.

3. Replace the Lost Agricultural Land

Theoretically, the 55 ac of prime agricultural land converted by the project could be replaced by the County by removing existing uses from approximately 55 ac of urban or nonurban land within Orange County and converting that acreage to agricultural use (assuming the underlying soils are considered prime agricultural land according to U.S. Natural Resources Conservation Service ["NRCS"] criteria). This measure would require not only purchasing a developed or unimproved site and removing existing uses but also selling or leasing the land to a farmer willing to make substantial improvements to the underlying land (e.g., leveling and fencing fields, developing irrigation facilities, finding and purchasing a reliable source of agricultural water). Implementing this measure would substantially reduce the impact, potentially resulting in no loss, or only a negligible loss, to the County's prime agricultural land base and agricultural productivity.

Analysis of Mitigation Measure No. 3. The adoption of Mitigation Measure No. 3 is not recommended for several reasons. Finding a developed or unimproved site readily available for conversion to agricultural uses with the underlying soil attributes required for effective mitigation would probably be difficult or even impossible because the land in the vicinity of the project site is either developed or designated for urban development. Additionally, the cost of purchasing approximately 55 ac of developed land, removing existing structures or other facilities, improving the site for agricultural use, and providing a reliable agricultural water supply for the site would be high and would likely preclude implementation of this measure. Similarly, purchasing 55 ac of unimproved land and improving it for agricultural use would be costly. Under either scenario, the County would also need to find a farmer willing to purchase or lease the site for farming. The fiscal issues addressed above would be constraints for this measure as well. In addition, the County has not adopted any General Plan policies or programs for the purpose of replacing converted prime agricultural lands as a viable means of permanently preserving agricultural land uses. In the absence of an established Countywide program, it is not recommended that the County institute such a program on a case-by-case basis at this time in light of the various fiscal and economic difficulties identified above.

4. Place Agricultural Conservation Easements on Existing Prime Agricultural Land

To partially compensate for the project-related loss of agricultural land, the County could protect other high-quality agricultural land; this measure would require placing agricultural conservation easements on approximately 55 ac of prime agricultural land within Orange County. To be effective, these easements could be placed on agricultural lands that have been identified as threatened by future development. In addition, protected parcels could be in areas dictated by County land use policies, including zoning policies, for use as commercial agricultural land.

Establishing agricultural conservation easements involves purchasing deed restrictions on prime agricultural lands that preclude their use for development or nonagricultural purposes. The deed restriction would be permanent unless otherwise negotiated. The land under an easement remains in private ownership and use. Typically, restrictions imposed by an agricultural conservation easement limit residential, non-farm commercial, industrial, and extractive (e.g., surface mining) uses of the land. Deeds often allow construction of facilities for the production and processing of agricultural products. A number of counties and communities in California, including the Counties of Marin, Sonoma, and Alameda and the Cities of Davis and Livermore, have active programs for purchasing development rights on prime agricultural lands. These programs are often administered by private nonprofit organizations but may be administered by a county government agency. Alternatively, a county may provide funding to a nonprofit land trust to purchase easements and hold development rights on prime agricultural lands. However, it should be recognized that the counties and communities in California with these active programs are likely to have corresponding General Plan and zoning policies that promote the protection of agriculture as a viable land use. The County currently has no General Plan land use designations or zoning designations that require land to be permanently protected for agricultural uses. The cost of purchasing development rights and establishing an easement generally reflects the value of a property's development rights, which is

generally equal to the difference between a property's unrestricted market value and its value when restricted to agricultural use. Valuation of development rights is usually determined by an appraisal of the fair market value of restricted and unrestricted agricultural land. Since entering into an easement agreement is voluntary on the part of the farmer, the landowner must agree to the monetary offer for the development rights.

To assure that future landowners of deed-restricted agricultural lands abide by restrictions on their land, monitoring of use is usually required, including periodic site visits by a local program administrator or representative.

County-level funding potentially available for purchasing easements includes general obligation bonds, which require an affirmative two-thirds vote of the county electorate, and discretionary revenues such as sales tax, property transfer tax, and property tax revenue. Additionally, while partial funding for easement purchases may be available through a grant from the state's Agricultural Land Stewardship Program, administered by the California Department of Conservation, if the County meets certain criteria for qualifying for a grant, the funding potentially available through this program is usually limited and not available as of 2012.

Although purchasing conservation easements on prime agricultural land would not offset or fully compensate for the project-related loss of prime agricultural land, easements would permanently protect agricultural land elsewhere in the County that could otherwise be displaced by future development. Purchasing easements to mitigate for impacts of the project could serve to provide a structure for mitigating for future projects within the County if a funding source for mitigation can be established. With an agricultural land preservation plan in place, easements could be strategically purchased to protect important agricultural lands in Orange County, thereby protecting at least a portion of the County's agricultural resources. Farmers participating in an agricultural easement purchase program could also benefit from the payment received in exchange for their development rights while they continue to farm. Farmers could also receive a reduction in property tax assessments.

Analysis of Mitigation Measure No. 4. The adoption of Mitigation Measure No. 4 is not recommended for several reasons. Implementing this measure would not directly result in the replacement of the agricultural land converted by the project; therefore, none of the direct adverse effects of the project on the County's prime agricultural land base and agricultural economy would be mitigated. Additionally, the cost of purchasing conservation easements could represent a significant impediment to implementing this measure. Depending on market values for restricted and unrestricted agricultural lands in the path of development, easement costs per acre could be very high, requiring the County to find funding sources within its existing budget structure, or to seek approval of general obligation bonds from voters within the County. However, for the fiscal reasons stated in the analysis of Mitigation Measure No. 3, purchase of agricultural conservation easements are likely to be cost-prohibitive.

Additionally, the County would need to locate willing sellers of development rights, which may prove difficult in areas of escalating land values. This factor is particularly true in the area surrounding the project site. Administering an easement program also could result in ongoing costs to purchase and monitor easements with funds provided by the County. However, these funds would have to come

from discretionary revenues of the County, and these revenues are already earmarked for existing and planned County capital improvement projects and other public programs and facilities.

To maximize the effectiveness of such a mitigation measure, the easements should be purchased in the context of a larger strategic plan for the protection and permanent preservation of agriculture within Orange County. This strategic plan should be linked to land use policies and programs contained in the County's General Plan and could take the form of an Agricultural Element in the General Plan. This strategic plan should also identify critical and threatened agricultural lands requiring protection, containing policies and programs (e.g., a right-to-farm ordinance, Williamson Act policies, water policies) designed to protect and enhance the agricultural economy and include a funding plan for purchasing easements (e.g., mitigation fees). Mitigation involving the purchase of conservation easements should be guided by this long-term plan rather than being implemented in a piecemeal fashion.

However, the County has not adopted an agricultural element to its General Plan, or any right-to-farm ordinance, agricultural preservation program, an agriculturally oriented conservation easement program, or any other similar regulation to ensure that agriculture remains a viable land use regardless of market forces. In addition, the County has no General Plan land use designations or zoning designations that require land to be permanently maintained as "agricultural" land without regard to agricultural trends in Orange County, or current market forces affecting agricultural operations and productivity in Orange County. In fact, the County Zoning Code expresses the intent that the "A 1 General Agricultural" district designation may be used as an interim zone in those areas that the General Plan may designate for more intensive urban uses in the future. This zoning policy acknowledges that agriculture is a commodity that must compete in a free-enterprise system without governmental subsidies and without local controls or regulations that may interfere with market forces.

The County could amend its General Plan and Zoning Code; however, such amendments have not been advocated in light of the trend in central and southern Orange County of converting agricultural lands to urban uses. Absent the County's adoption of General Plan policies or programs for the purchase of conservation easements as a viable means of permanently preserving agricultural land uses throughout the County, including the adoption of applicable Zoning Code provisions, the EIR does not recommend that the County institute such a program on a case-by-case basis in light of the various fiscal and economic difficulties identified above.

5. Establishment of a Transfer-of-Development Rights Program

To partially compensate for the project-related loss of agricultural land, the County could establish a transfer-of-development rights ("TDR") program to protect agricultural land elsewhere in the County.

A TDR program is a complex protection tool that works by transferring development rights from lands that should remain in agricultural use to areas where increases in density are encouraged. A typical TDR program establishes both a preservation district (the "sending" area) and a development district (the "receiving" area). Development rights are assigned for all properties in the sending area. Landowners wishing to develop to higher densities in the receiving area purchase development rights from landowners in the sending area. Developers in receiving areas are encouraged to participate in

the program by the offer of a density bonus, which allows development at a higher density than is provided for by current zoning. The public pays only for the administration of the TDR program.

TDR programs can be mandatory or voluntary, but voluntary programs in which the landowner in the sending area has the option of either developing the land, typically at large-lot density, or selling the development rights are more common. While TDR is a concept that planners have discussed for years, it has only been widely implemented in Montgomery County, Maryland, and as part of a New Jersey program. Eleven California counties have enacted TDR programs with varying degrees of success, including Amador, Butte, Lassen, Marin, Mono, Monterey, Nevada, Placer, San Luis Obispo, San Mateo, and Shasta Counties.

Successful implementation of a TDR program could result in the targeted protection of agricultural land within the County at little ongoing cost to local government. One virtue of a TDR program is that it establishes a means under the free market system of moving development away from valuable agricultural resources to desirable, publicly identified locations. Once established, a TDR program could be used to partially mitigate for the adverse agricultural effects of future development projects within Orange County.

Analysis of Mitigation Measure No. 5. The adoption of Mitigation Measure No. 5 is not recommended for several reasons. A TDR program would do little to mitigate for the loss of agricultural land due to the project because protecting agricultural lands off site would not directly offset the project-related conversion of agricultural lands at the project site. Further, TDR programs are designed to facilitate transfers of development rights between the owners of private properties. Since the project site is publicly owned, it would be difficult to design a TDR program that would functionally mitigate for project impacts. TDR programs are better implemented as part of long-term Countywide planning processes, such as General Plan updates or other Countywide agricultural land protection efforts. No such County planning processes are either in place or contemplated to facilitate an effective TDR program.

The process of designing and implementing a TDR program can be cumbersome, typically requiring extensive up-front land use planning and public input. TDR programs often are controversial because they can affect property values in both receiving and sending areas. Other problems with TDR programs include a potential lack of willing sellers in the sending area even though there are interested buyers in the receiving area. On balance, while a TDR program could effectively protect off-site agricultural lands, the ability of the County to design and implement a TDR program for publicly owned land in a timely manner to successfully reduce project impacts is not considered practical or reasonable. The fiscal considerations referred to in Mitigation Measure No.1 above would also play an important role in any decision by the County.

6. Enact a Right-to-Farm Ordinance

The extension of urban development into farming areas not only reduces the amount of land available for crop production but also may make it more difficult for farmers to continue farming because of the incompatibility of suburban and urban neighbors. Dust, odors, pesticide use, and machinery noise associated with normal farming operations may generate nuisance suits from new neighbors. Farmers

also may experience increased costs associated with garbage dumping on their property, theft of produce and equipment, vandalism of equipment, and increased traffic on roads used to move equipment between fields.

Existing farming operations near developing urban areas may be protected by the County through enacting a right-to-farm ordinance. Although the California Legislature has passed a right-to-farm law that applies to the entire state, at least 33 counties in the state have enacted local right-to-farm ordinances to provide additional protections to farmers in quickly urbanizing farm areas. A right-to-farm ordinances make it more difficult for homeowners to claim that their property rights are being affected by nearby farming operations if the operations were in existence when the homeowners bought their property.

Local right-to-farm ordinances may incorporate one or more of the following:

(a) a declaration that normal farming operations do not constitute a nuisance if begun before a complaining neighbor moved in;

(b) an agricultural use notice requiring sellers, real estate agents, and title companies to inform prospective home buyers that commercial farming operations are close by and that odors, dust, flies, and noise may accompany such operations;

(c) a grievance or arbitration committee established to mediate disputes between farmers and non-farm residents; and

(d) the levying of fines for damages to farmers resulting from vandalism and pilferage

Enacting a right-to-farm ordinance would strengthen the County's commitment to protecting farming operations and agricultural resources in urbanizing areas of Orange County. To some extent, it would alleviate some of the indirect adverse effects on farmers that result from the extension of development into the County's traditional fanning areas. Costs of enacting and administering an ordinance would be relatively low compared to the high costs of measures that directly protect agricultural land (i.e., conservation easements).

Analysis of Mitigation Measure No. 6. Mitigation Measure No. 6 is not recommended for adoption for several reasons. Because a right-to-farm ordinance would not increase the amount of agricultural land within the County, it would do little to mitigate the direct effect of the project. Additionally, an ordinance would provide no direct protection for the County's remaining agricultural lands, allowing those lands to continue to be vulnerable to urban development pressures. Also, the County has not elected to adopt a right-to-farm ordinance in the past, despite a continuing trend in central and southern Orange County to convert agricultural land to urban uses. There is nothing unique about this project that would warrant a reevaluation by the County of the need for a right-to-farm ordinance. To be meaningful, mitigation for project impacts should provide long-term protection for productive off-site agricultural lands and certainty that the mitigation would be implemented. Based on these criteria, implementing a right-to-farm ordinance would not provide adequate long-term protection for important agricultural land within Orange County.

7. Enroll Existing Agricultural Land Under a Williamson Act Contract

To compensate for the loss of agricultural land on the project site, the County could encourage farmers to enroll lands in Williamson Act contracts through a notification and information campaign. For example, information on the tax and agricultural land protection benefits of enrolling in the County's Williamson Act program could be included in the property tax bills of owners of agriculturally zoned lands. The Williamson Act is a voluntary land conservation program that has been in existence since 1965. A total of 42 of the state's 58 counties participate in the program, including Orange County. The Williamson Act program is administered by the County, and landowners voluntarily enroll in the program by contractually committing to restrict the use of their land to agricultural and open space uses for at least 10 years. In return, the landowner is taxed at a rate based on the actual use of the land for agricultural purposes, as opposed to its unrestricted market value. As of 2012, the state has cut all funding to the Williamson Act program.

A Williamson Act contract is generally considered to be an effective tool for the short-term protection of agricultural land. Administrative costs for enrolling additional lands would be minor because a Williamson Act program is already in place in Orange County. The costs of enacting an education and notification program are unknown.

Analysis of Mitigation Measure No.7. The adoption of Mitigation Measure No. 7 is not recommended for several reasons. Enrolling additional agricultural land under Williamson Act contracts would not directly reduce the agricultural land conversion impact of the project and would not permanently protect agricultural land from development. Because the program is voluntary, it may be difficult for the County to encourage new enrollments, especially for agricultural lands with high speculative land values because they are in the path of development. These factors are particularly relevant in portions of central and southern Orange County, where land values place pressure upon landowners to convert agricultural operations to urban uses. Landowners may also be resistant to limiting their near-term options for their properties. In addition, although the County receives subvention payments from the state to offset property tax reductions for lands under Williamson Act contracts, subvention payments may not fully offset the loss of property tax revenue from new properties placed under contract, resulting in a net revenue loss to the County treasury. To be meaningful, mitigation for project impacts should provide long-term protection for productive agricultural lands and certainty that the mitigation would be implemented. Based on these criteria, encouraging additional enrollments of agricultural land in the County's Williamson Act program may not be effective since landowner participation is voluntary and, therefore, provides little certainty of success.

4.2.5 Agricultural Mitigation Measures from Other Relevant EIRs

Other jurisdictions in the area such as the Cities of Irvine and Lake Forest have found similar problems with the feasibility of mitigation measures for impacts to agricultural lands and uses.

The proposed mitigation measures in the Great Park EIR considered methods of mitigating the impacts to agricultural lands and uses similar to Recirculated EIR 564; most were found infeasible, and none could mitigate the impact to less than significant adverse impact. This issue was not revisited in the 2011 Supplemental EIR for the Great Park Neighborhoods Project.

In 2002, the City of Irvine it its Northern Sphere EIR took an approach similar to the Recirculated EIR 564 to evaluate agricultural mitigation measures, and found them mostly infeasible with the exception of several set-aside areas that could preserve less than 10 percent (300 ac of 3,601.9 ac total agricultural acreage) of the existing agricultural lands in the Northern Sphere Area. It should be noted that the project was not a City-initiated project and, thus, the City was in the position to condition or exact mitigation as part of the project approval beyond its agricultural programs and policies.

Later in 2006 and 2008, the City of Lake Forest evaluated the topic of mitigation for agricultural impacts as part of the Opportunities Study Program EIR. The City found that it had no means, policies, or funding to commit to agricultural preservation on the development parcels it evaluated.

4.2.6 Level of Significance After Mitigation

As noted in Section 4.2.3 above, additional and unmitigated impacts to agricultural uses and resources will occur with implementation of the JAMF Revised Master Plan. The County finds itself with limited mitigation options for agricultural impacts, as discussed in Section 4.2.4. Finding that none of these mitigation measures are feasible, especially under the increasingly limited budget the County has and the reduction of state funding and support, the County cannot implement any of the proposed mitigation measures. The impacts remain unavoidable and significant on an individual and cumulative basis. Findings and overriding considerations will be required prior to approval of the proposed Revised JAMF Master Plan.

4.3 GLOBAL CLIMATE CHANGE

4.3.1 Introduction

This section was not included in EIR 564 because it was not a requirement under the law at that time.[1] The analysis includes information based on what is currently known about GCC and applicable policies relating to GCC.

Increasing public awareness and general scientific consensus that GCC is occurring have placed a new focus on CEQA as a potential means to address a project's greenhouse gas (GHG) emissions. CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects considered for approval. GCC can be considered an "effect on the environment," and an individual project's incremental contribution to GCC can have a cumulatively considerable impact.

Land use projects may contribute to the phenomenon of GCC in ways that would be experienced worldwide and with some specific effects felt in California. However, no scientific study has established a direct causal link between individual land use project impacts and global warming.

Cumulative impacts are the collective impacts of one or more past, present, or future projects that when combined, result in adverse changes to the environment. Climate change is a global

[1] Recent case law suggests that climate change alone, may not be considered new information pursuant to CEQA Section 21166. See *Citizens for Responsible Equitable Environmental Development v. City of San Diego (2011) 196 Cal.App.4th 515, 530-532.*

environmental problem in which: (a) any given development project contributes only a small portion of any net increase in GHGs, and (b) global growth is continuing to contribute large amounts of GHGs across the world. No individual project would result in a significant impact on GCC or an environmental impact resulting from GCC. Therefore, this section addresses climate change primarily as a cumulative impact.

This section begins by providing general background information on climate change and meteorology. It then discusses the regulatory framework for GCC, provides data on the existing global climate setting, and evaluates potential global GHG emissions associated with the proposed project. Modeled project emissions are estimated based on the land uses proposed as part of the project, vehicle data, and project trip generation, among other variables. The section then evaluates whether the project could cause a cumulatively considerable contribution to climate change by conflicting with the implementation of GHG reduction measures under AB 32 or other state regulations. The information and analysis provided in this section rely primarily on the Climate Action Team (CAT) 2006 Final Report, Intergovernmental Panel on Climate Change (IPCC) Assessment Reports, various California Air Resources Board (ARB) staff reports, and other related GCC documents that provide background information on the impacts of GHG emissions.

4.3.2 Setting

The following discussion provides an overview of GCC, its causes, and its potential effects. The regulatory framework relating to GCC is also summarized.

Global Climate Change. GCC is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other significant changes in climate (such as precipitation or wind) that last for an extended period of time. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures.

Climate change refers to any change in measures of weather (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from natural factors, such as changes in the sun's intensity; natural processes within the climate system, such as changes in ocean circulation; or human activities, such as the burning of fossil fuels, land clearing, or agriculture. The primary observed effect of GCC has been a rise in the average global tropospheric[1] temperature of 0.36 degrees Fahrenheit (°F) per decade, determined from meteorological measurements worldwide between 1990 and 2005. Climate change modeling shows that further warming could occur, which would induce additional changes in the global climate system during the current century. Changes to the global climate system, ecosystems, and the environment of California could include higher sea levels, drier or wetter weather, changes in ocean salinity, changes in wind patterns, or more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and increased intensity of tropical cyclones. Specific effects in California might include a decline in the Sierra Nevada snowpack, erosion of California's coastline, and seawater intrusion in the Delta.

[1] The troposphere is the zone of the atmosphere characterized by water vapor, weather, winds, and decreasing temperature with increasing altitude.

Global surface temperatures have risen by 1.33°F ± 0.32°F over the last 100 years (1906–2005). The rate of warming over the last 50 years is almost double that over the last 100 years.[1] The latest projections, based on state-of-the art climate models, indicate that temperatures in California are expected to rise 3–10.5°F by the end of the century.[2] The prevailing scientific opinion on climate change is that "most of the warming observed over the last 50 years is attributable to human activities."[3]

Increased amounts of carbon dioxide (CO_2) and other GHGs are the primary causes of the human-induced component of warming. The observed warming effect associated with the presence of GHGs in the atmosphere (from either natural or human sources) is often referred to as the greenhouse effect.[4]

GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced GCC are:

- CO_2
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur Hexafluoride (SF_6)

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect, which is believed to be causing global warming. While humanmade GHGs include naturally occurring GHGs such as CO_2, CH_4, and N_2O, some gases, such as HFCs, PFCs, and SF_6, are completely new to the atmosphere.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes such as oceanic evaporation.

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1 Intergovernmental Panel on Climate Change (IPCC), 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.*

2 California Climate Change Center, 2006. *Our Changing Climate. Assessing the Risks to California.* July.

3 IPCC, *Climate Change 2007: The Physical Science Basis*, http://www.ipcc.ch.

4 The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduce the amount of heat that escapes, greenhouse gases like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, although an excess of greenhouse gas results in global warming, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

For the purposes of this Supplemental EIR, the term "GHGs" will refer collectively to the gases listed above only.

These gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to CO_2, the most abundant GHG; the definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e), which is discussed later in this section. Table 4.A shows the GWPs for each type of GHG. For example, SF_6 is 22,800 times more potent at contributing to global warming than CO_2.

Table 4.A: Global Warming Potentials

GHG	Atmospheric Lifetime (Years)	Global Warming Potential (100-year Time Horizon)
Carbon Dioxide (CO_2)	50–200	1[1]
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	298
HFC-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC: Tetrafluoromethane (CF_4)	50,000	7,390
PFC: Hexafluoromethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: IPCC, 2007. *Climate Change 2007: The Physical Science Basis.* Contribution of Working Group I to the Fourth Assessment Report of the IPCC.
CO_2 is the relative standard by which the other GHGs are measured.
GHG = greenhouse gas

The following discussion summarizes the characteristics of the six GHGs.

Carbon Dioxide (CO_2). In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals, and plants; volcanic outgassing; decomposition of organic matter; and evaporation from the oceans. Human sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. Natural sources release approximately 150 billion tons of CO_2 each year, far outweighing the 7 billion tons of humanmade emissions of CO_2 each year. Nevertheless, natural removal processes, such as photosynthesis by land- and ocean-dwelling plant species, cannot keep pace with this extra input of humanmade CO_2; consequently, the gas is building up in the atmosphere. The concentration of CO_2 in the atmosphere has risen approximately 30 percent since the late 1800s.[1]

[1] California Environmental Protection Agency (CalEPA). 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

In 2002, CO_2 emissions from fossil fuel combustion accounted for approximately 98 percent of humanmade CO_2 emissions and approximately 84 percent of California's overall GHG emissions (CO_2e). The transportation sector accounted for California's largest portion of CO_2 emissions, with gasoline consumption making up the greatest portion of these emissions. Electricity generation was California's second-largest category of GHG emissions.

Methane (CH_4). CH_4 is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands, termites, and oceans. Anthropogenic sources include rice cultivation, livestock, landfills and waste treatment, biomass burning, and fossil fuel combustion (burning of coal, oil, natural gas, etc.). Decomposition occurring in landfills accounts for the majority of human-generated CH_4 emissions in California and in the U.S. as a whole. Agricultural processes such as intestinal fermentation, manure management, and rice cultivation are also significant sources of CH_4 in California. CH_4 accounted for approximately 6 percent of gross climate change emissions (CO_2e) in California in 2002. [1]

Total annual emissions of CH_4 are approximately 500 million tons, with humanmade emissions accounting for the majority. As with CO_2, the major removal process of atmospheric CH_4 (a chemical breakdown in the atmosphere) cannot keep pace with source emissions, and CH_4 concentrations in the atmosphere are increasing.

Nitrous Oxide (N_2O). N_2O is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. N_2O is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N_2O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N_2O emissions in California. N_2O emissions accounted for nearly 7 percent of humanmade GHG emissions (CO_2e) in California in 2002.

Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulfur Hexafluoride (SF_6). HFCs are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol.[2] PFCs and SF_6 are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry leads to greater use of PFCs. HFCs, PFCs, and SF_6 accounted for approximately 3.5 percent of humanmade GHG emissions (CO_2e) in California in 2002.

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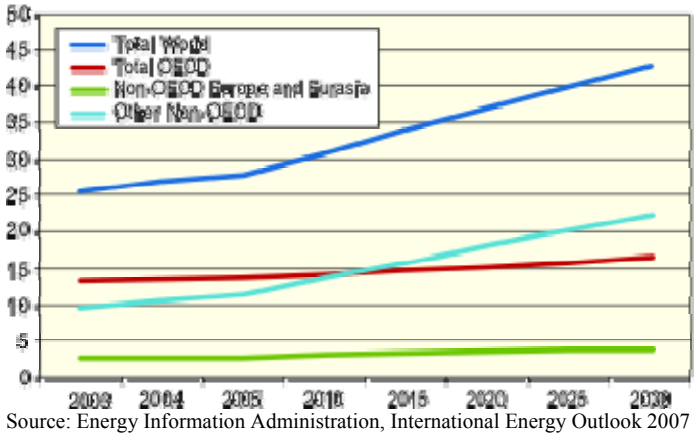
1 California Environmental Protection Agency (CalEPA). 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

2 The Montreal Protocol is an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion.

Emissions Inventories. An emissions inventory that identifies and quantifies the primary human-generated sources and sinks (any process, activity, or mechanism that removes a GHG from the atmosphere) of GHGs and, thereby, accounts for the amount of GHGs emitted to or removed from the atmosphere over a specific period of time by a particular source is a well-recognized and useful tool for addressing climate change. This section summarizes the latest information on global, U.S., California, and local GHG emission inventories.

Global Emissions. Worldwide emissions of GHGs in 2008 were 30,000 million metric tons[1] (MMT) of CO_2e per year[2] (including both ongoing emissions from industrial and agricultural sources, but excluding emissions from land use changes). Worldwide CO_2 emissions are expected to increase by 1.8 percent annually between 2004 and 2030 (Figure 4-4). Much of the increase in these emissions is expected to occur in the developing world, where emerging economies, such as China and India, fuel economic development with fossil energy. Emissions from the countries outside the Organization for Economic Cooperation and Development (OECD) are expected to grow above the world average at 2.6 percent annually between 2004 and 2030.



Source: Energy Information Administration, International Energy Outlook 2007 (Washington, D.C., May 2007).

Note: The Organization for Economic Cooperation and Development (OECD) includes Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, South Korea, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

Figure 4-4: Worldwide Carbon Dioxide Emissions by Region, 2003–2030 (billions of metric tons of carbon dioxide)

1 A metric ton is equivalent to approximately 1.1 U.S. short tons.

2 United States Energy Information Administration. *Greenhouse Gases, Climate Change, and Energy*, http://www.eia.doe.gov/bookshelf/brochures/greenhouse/Chapter1.htm, accessed August 27, 2009.

U.S. Emissions. In 2008, the U.S. emitted approximately 5,820 MMT of CO_2e. Of the six major sectors nationwide (electric power, residential, commercial, industrial, agricultural, and transportation), transportation accounts for the highest fraction of GHG emissions (approximately 35–40 percent). These emissions are entirely generated from direct fossil fuel combustion. Between 1990 and 2006, the total U.S. GHG emissions rose approximately 14.7 percent, while falling by 3 percent in 2008.[1]

State of California Emissions. According to ARB emissions inventory estimates, California emitted approximately 474 MMT of CO_2e emissions in 2008.[2] This large number is due primarily to the sheer size of California compared to other states. By contrast, California has the fourth lowest per-capita CO_2 emission rate from fossil fuel combustion in the country due to the success of its energy efficiency and renewable energy programs and commitments that have lowered the state's GHG emissions rate of growth by more than half of what it would have been otherwise.[3] Another factor that has reduced California's fuel use and GHG emissions is its mild climate compared to that of many other states.

The California Environmental Protection Agency (CalEPA) CAT stated in its March 2006 report that the composition of gross climate change pollutant emissions in California in 2002 (expressed in terms of CO_2e) was as follows:

- CO_2 accounted for 83.3 percent
- CH_4 accounted for 6.4 percent
- N_2O accounted for 6.8 percent
- HFCs, PFC, and SF_6 accounted for 3.5 percent[4]

The ARB estimates that transportation is the source of approximately 38 percent of the state's GHG emissions in 2004, followed by electricity generation (both in state and out of state) at 25 percent, and industrial sources at 20 percent. The remaining sources of GHG emissions are residential and commercial activities at 9 percent, agriculture at 6 percent, high GWP gases at 3 percent, and recycling and waste at 1 percent.[5]

The ARB is responsible for developing the California GHG Emissions Inventory. This inventory estimates the amount of GHGs emitted to and removed from the atmosphere by

1 U.S. Environmental Protection Agency (EPA). 2009. The U.S. Greenhouse Gas Emissions and Sinks: Fast Facts. http://www.epa.gov/climatechange/emissions/downloads/2008_GHG_Fast_Facts.pdf.

2 California Air Resources Board, Greenhouse Gas Inventory Data – 2000 to 2008. Available at http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed April 2011.

3 California Energy Commission (CEC), 2007. Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 – Final Staff Report, publication # CEC-600-2006-013-SF, Sacramento, CA, December 22, 2006; and January 23, 2007 update to that report.

4 California Environmental Protection Agency, 2006. Climate Action Team Report to Governor Schwarzenegger and the Legislature. March.

5 California Air Resources Board (ARB), 2008. http://www.climatechange.ca.gov/inventory/index.html. September.

human activities within the State of California and supports the AB 32 Climate Change Program. The ARB's current GHG Emissions Inventory covers the years 1990–2004 and is based on statewide fuel use, processing, and activity data. The Emissions Inventory estimates are based on the actual amount of all fuels combusted in the state, which accounts for over 85 percent of the GHG emissions within California.

ARB staff has projected 2020 unregulated GHG emissions, which represent the emissions that would be expected to occur in the absence of any GHG reduction actions. ARB staff estimates that statewide 2020 unregulated GHG emissions will be 596 MMT of CO_2e.

GHG emissions from the transportation and electricity sectors as a whole are expected to increase, but remain at approximately 38 percent and 23 percent of total CO2e emissions, respectively. The industrial sector consists of large stationary sources of GHG emissions, and the percentage of the total 2020 emissions is projected to be 17 percent of total CO2e emissions. The remaining sources of GHG emissions in 2020 are high global warming potential gases at 8 percent, residential and commercial activities at 8 percent, agriculture at 5 percent, and recycling and waste at 1 percent.

South Coast Area Emissions. The total South Coast Air Quality Management District (SCAQMD) GHG emissions for 2004 are estimated to be 5,703 MT, of which 901 MT are from mobile sources (agency fleet vehicles), 1,900 MT are from stationary combustion sources, and 2,902 MT are from energy consumption. These emissions were estimated using total fuel usage for the agency's fleet vehicles and combustion sources, total electricity usage, and appropriate established emission factors and conversion factors.

On January 10, 2008, the SCAQMD petitioned the federal government to take immediate action to protect public health from GHG pollution by adopting tough new standards for all oceangoing ships calling on U.S. ports. Oceangoing ships emit 3 percent of the world's GHGs, which is more than that emitted by all but six individual countries. This followed a lawsuit filed by the SCAQMD in 2007 aimed at requiring the EPA to regulate smog-forming emissions such as nitrogen oxides and sulfur oxides from ships. On June 6, 2008, the SCAQMD approved the SoCal Climate Solutions Exchange, a preliminary plan for developing a GHG emissions reduction program.

County of Orange Emissions. At the time this Supplemental EIR was prepared, GHG emission inventories were not available for the County of Orange.

Regulatory Framework. The regulatory framework and other governmental activities addressing GHG emissions and GCC are discussed in this section.

Federal Regulations. The U.S. has historically had a voluntary approach to reducing GHG emissions. However, on April 2, 2007, the U.S. Supreme Court ruled that the EPA has the authority to regulate CO_2 emissions under the federal Clean Air Act (CAA). While there currently are no adopted federal regulations for the control or reduction of GHG emissions, the EPA commenced several actions in 2009 that are required to implement a regulatory approach to GCC.

On September 30, 2009, the EPA announced a proposal that focuses on large facilities emitting over 25,000 tons of GHG emissions per year. These facilities would be required to obtain permits that would demonstrate they are using the best practices and technologies to minimize GHG emissions.

On December 7, 2009, the EPA Administrator signed a final action under the CAA, finding that six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to GCC. This EPA action does not impose any requirements on industry or other entities. However, the findings are a prerequisite to finalizing the GHG emission standards for light-duty vehicles mentioned below.

On April 1, 2010, the EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a final joint rule to establish a national program consisting of new standards for model years 2012–2016 light-duty vehicles that will reduce GHG emissions and improve fuel economy. The EPA is finalizing the first-ever national GHG emissions standards under the CAA, and NHTSA is finalizing Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act. The EPA GHG standards require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile in model year 2016, equivalent to 35.5 miles per gallon (mpg).

State Regulations. In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order (EO) S-3-05. This EO established the following goals for the State of California: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80 percent below 1990 levels by 2050.

California's major initiative for reducing GHG emissions is outlined in AB 32, the "Global Warming Solutions Act," passed by the California State legislature on August 31, 2006. AB 32 will require ARB to:

- Establish a statewide GHG emissions cap for 2020, based on 1990 emissions, by January 1, 2008;
- Adopt mandatory reporting rules for significant sources of GHG emissions by January 1, 2008;
- Adopt an emissions reduction plan by January 1, 2009, indicating how emissions reductions will be achieved via regulations, market mechanisms, and other actions; and
- Adopt regulations to achieve the maximum technologically feasible and cost-effective reductions of GHGs by January 1, 2011.

The ARB has established the level of GHG emissions in 1990 at 427 MMT CO_2e. The emissions target of 427 MMT requires the reduction of 169 MMT from the state's projected business-as-usual 2020 emissions of 596 MMT. AB 32 requires ARB to prepare a Scoping Plan that outlines the main state strategies for meeting the 2020 deadline and to reduce GHGs that contribute to

GCC. The Scoping Plan was approved by ARB on December 11, 2008, and includes measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures.[1] Emission reductions that are projected to result from the recommended measures in the Scoping Plan are expected to total 174 MMT CO2e, which would allow California to attain the emissions goal of 427 MMT CO2e by 2020. The Scoping Plan includes a range of GHG reduction actions that may include direct regulations, alternative compliance mechanisms, monetary and nonmonetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. The Scoping Plan, even after Board approval, remains a recommendation. The measures in the Scoping Plan will not be binding until after they are adopted through the normal rulemaking process. The ARB rule-making process includes preparation and release of each of the draft measures, public input through workshops, and a public comment period, followed by an ARB Board hearing and rule adoption.

In addition to reducing GHG emissions to 1990 levels by 2020, AB 32 directed ARB and the newly created CAT[2] to identify a list of "discrete early action GHG reduction measures" that can be adopted and made enforceable by January 1, 2010. The following recommendations were adopted by the CAT at its June 23, 2010, public meeting. These policies commit the state to reduce the greenhouse gas intensity of its operations through gains in efficiency and adoption of sustainable business practices. These policies commit all Executive Branch agencies to actions leading to reductions in greenhouse gas emissions.

- Include both direct and indirect (as defined) emissions from Executive Branch agencies in the scope of emissions considered for reduction activities.
- Require each state agency to develop and implement a GHG reduction policy that reduces its GHG emissions by 30 percent by 2020, while allowing some flexibility for the agencies based on their individual characteristics, operations, and resources.
- Create a uniform GHG reporting protocol appropriate to state government operations, and establish and maintain a state-wide inventory of GHG emissions from State Government projects and operations based on this protocol.
- Establish a GHG emission goal (in MT of CO2e) for state government projects and operations that is based on the findings of the inventory. (i.e., a State Operations "Cap").
- Conduct a review of laws, regulations, policies and procedures to evaluate their effect on state agencies' ability to manage GHG emissions.
- Implement existing Green Building Executive orders and reduce electricity purchased for buildings by 20 percent by 2015.
- Support the implementation of the Governor's Information Technology Executive Order (S-3-10), which seeks a 30 percent reduction in energy consumption by IT and telecommunications equipment by 2012.

1 ARB. 2008. *Climate Change Proposed Scoping Plan: a Framework for Change*. October.

2 CAT is a consortium of representatives from state agencies who have been charged with coordinating and implementing GHG emission reduction programs that fall outside of ARB's jurisdiction.

- Support ongoing efforts by the Department of Water Resources (DWR) to reduce the carbon intensity of the electricity purchased for the operation of the California Water Project, and to increase the efficiency of pumps and motors used in its operation.
- Improve the efficiency and efficient use of vehicles in the state fleet.
- Reduce business related employee travel, and explore additional resources and infrastructure needed to facilitate this reduction in travel.
- Reduce emissions associated with employee commuting.
- Adopt Employee Best Practices throughout state government, aimed at reducing GHG emissions up the supply chain and improving overall sustainability of state government operations.
- Pursue greener lease terms and specify additional green requirements in new and renewed building leases.
- Require participation in the California Energy Commission's (CEC) Energy Performance Rating (currently under development) by California State-owned buildings.

To assist public agencies in the mitigation of GHG emissions or analyzing the effects of GHGs under CEQA, including the effects associated with transportation and energy consumption, Senate Bill (SB) 97 (Chapter 185, 2007) requires the Governor's Office of Planning and Research (OPR) to develop CEQA guidelines on how to minimize and mitigate a project's GHG emissions. The OPR prepared, developed, and transmitted these guidelines in May 2009 the Resources Agency certified and adopted them December 30, 2009, and they became effective on March 18, 2010. The amendments encourage lead agencies to consider many factors in performing a CEQA analysis, but preserve the discretion granted by CEQA to lead agencies in making their own determinations.

SB 375, signed into law on October 1, 2008, is intended to enhance ARB's ability to reach AB 32 goals by directing ARB to develop regional GHG emissions reduction targets to be achieved within the automobile and light truck sectors for 2020 and 2035. ARB is working with California's 18 metropolitan planning organizations to align their regional transportation, housing, and land use plans and prepare a "Sustainable Communities Strategy" to reduce the number of vehicle miles traveled in their respective regions and demonstrate the region's ability to attain its GHG reduction targets.

Additionally, SB 375 provides incentives for creating attractive, walkable, and sustainable communities and revitalizing existing communities. The bill exempts home builders from certain CEQA requirements if they build projects consistent with the new sustainable community strategies. It will also encourage the development of more alternative transportation options to promote healthy lifestyles and reduce traffic congestion.

Local Policies. While the County of Orange General Plan does not include policies that specifically address GCC, the following goals and policies listed in Table 4.B would be expected to reduce GHG emissions.

Table 4.B: General Plan Goals and Policies that Would Reduce GHG Emissions

Land Use Element – Creative Design Concepts Policy	*To encourage innovative concepts which contribute to the solution of land use problems.* The purpose of the Creative Design Concepts Policy is to encourage the use of innovative planning ideas that give variety to the character of development and solve certain site development problems. New design concepts can facilitate environmentally sensitive development and the economic and efficient provision of services and facilities.
Land Use Element – Enhancement of Environment Policy	*To guide development so that the quality of the physical environment is enhanced.* The purpose of the Enhancement of Environment Policy is to ensure that all land use activities seek to enhance the physical environment, including the air, water, sound levels, landscape, and plant and animal life. This policy does not mean that environmental enhancement precludes development. It recognizes the need to improve both the manmade and natural environments. Where aspects of the natural environment are deemed to be truly significant, this policy requires measures be taken to preserve these aspects.
Transportation Element – Main Purpose	*To develop an integrated transportation system consisting of a blend of transportation modes capable of meeting the need to move people and goods by private and public means with maximum efficiency, convenience, economy, safety, and comfort and a system that is consistent with other goals and values of the County and the region.*
Transportation Element – County's Goal	The County's goal is to coordinate with the cities and OCTA as the regional transportation planning agency (RTPA) to develop a consistent intra-community arterial highway system that will effectively serve existing and future land uses within its jurisdiction**.**
Transportation Element – Goal 1.3	Develop a program to monitor arterial highway conditions at intersections within the unincorporated areas to ensure that an acceptable Level of Service (LOS) is maintained.
Transportation Element – Goal 1.5	Develop a circulation phasing plan to ensure that adequate roadway capacity is available on the circulation network to accommodate increments of new development.
Transportation Element – Goal 3	Provide a circulation plan that facilitates the safe, convenient and efficient movement of people and goods throughout unincorporated areas of the County.
Transportation Element – Goal 4	Ensure that the circulation plan conforms to applicable environmental quality standards.
Transportation Element – Goal 6	Implement transportation demand management (TDM) and transportation systems management (TSM) strategies which reduce peak hour vehicle travel demand and minimize single-occupant vehicles and trip length on the unincorporated County roadway system.
Resources Element – Goal 1	Maximize the conservation and wise use of energy resources in all residences, businesses, public institutions, and industries in Orange County.
Resources Element – Goal 2	Encourage the utilization of existing energy resources to their highest potential and the development of alternative energy sources consistent with sound energy conservation practices and techniques to meet the County's future energy demand.
Resources Element – Goal 3	Maximize the conservation of energy resources in all future land use and transportation planning decisions.

Source: County of Orange General Plan, 2005; LSA Associates, Inc., 2009.

4.3.3 Impacts and Mitigation Measures

This section evaluates significant impacts to GCC that could result from implementation of the proposed project (the proposed project would not result in significant impacts to GCC). Because it is not possible to tie specific GHG emissions to actual changes in climate, this evaluation focuses on the project's emission of GHGs. Mitigation measures are identified as appropriate.

Criteria of Significance. The recommended approach for GHG analysis included in OPR's June 2008 release is to: (1) identify and quantify GHG emissions; (2) assess the significance of the impact on climate change; and (3) if significant, identify alternatives and/or mitigation measures to reduce the impact to below a level of significance.[1] Neither the CEQA statute nor the CEQA Guidelines prescribe thresholds of significance or a particular methodology for performing an impact analysis; as with most environmental topics, significance criteria are left to the judgment and discretion of the lead agency.

The June 2008 OPR guidance provides some additional direction regarding planning documents, as follows:

> CEQA can be a more effective tool for GHG emissions analysis and mitigation if it is supported and supplemented by sound development policies and practices that will reduce GHG emissions on a broad planning scale and that can provide the basis for a programmatic approach to project-specific CEQA analysis and mitigation…. For local government lead agencies, adoption of General Plan policies and certification of General Plan EIRs that analyze broad jurisdiction-wide impacts of GHG emissions can be part of an effective strategy for addressing cumulative impacts and for streamlining later project-specific CEQA reviews.

The new GHG-related CEQA Guidelines (Section 15064.4) state:

> (a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in section 15064. A lead agency should make a good-faith effort, based on available information, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project. A lead agency shall have discretion to determine, in the context of a particular project, whether to:
>
> (1) Use a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use. The lead agency has discretion to select the model it considers most appropriate provided it supports its decision with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use; or

[1] State of California, 2008. Governor's Office of Planning and Research. *CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act Review*. June 19.

(2) Rely on a qualitative analysis or performance based standards.

(b) A lead agency may consider the following when assessing the significance of impacts from greenhouse gas emissions on the environment:

(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.

(2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.

(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

CEQA Guidelines Section 15064(b) provides that the "determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data," and further, states that an "ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

Individual projects incrementally contribute toward the potential for GCC on a cumulative basis in concert with all other past, present, and probable future projects. While individual projects are unlikely to measurably affect GCC, each of these projects incrementally contributes toward the potential for GCC on a cumulative basis, in concert with all other past, present, and probable future projects.

Revisions to Appendix G of the CEQA Guidelines suggest that the project be evaluated for the following impacts:

- Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
- Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

However, despite this, currently neither the CEQA statutes, OPR guidelines, nor the CEQA Guidelines prescribe thresholds of significance or a particular methodology for performing an impact analysis; as with most environmental topics, significance criteria are left to the judgment and discretion of the Lead Agency.

On December 5, 2008, the SCAQMD adopted an interim GHG threshold of significance for projects where it is the Lead Agency using a tiered approach for determining significance.[1] The objective of the SCAQMD's interim GHG threshold of significance proposal is to achieve a GHG emission capture rate of 90 percent of all new or modified stationary source projects. SCAQMD asserts that a GHG threshold of significance based on a 90 percent emission capture rate is considered be more appropriate to address the long-term adverse impacts associated with GCC because most projects will be required to implement GHG reduction measures. SCAQMD further asserts that a 90 percent GHG emission capture rate sets the emission threshold low enough to capture a substantial fraction of future stationary source projects that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions. The following bullet points describe the basic structure of SCAQMD's tiered interim GHG significance threshold for stationary sources:

- **Tier 1** consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA. If the project qualifies for an exemption, no further action is required. If the project does not qualify for an exemption, then it would move to the next tier.
- **Tier 2** consists of determining whether or not the project is consistent with a GHG reduction plan that may be part of a local General Plan, for example. The concept embodied in this tier is equivalent to the existing consistency determination requirements in CEQA Guidelines Sections 15064(h)(3), 15125(d), or 15152(a). The GHG reduction plan must, at a minimum, comply with AB 32 GHG reduction goals, include an emissions inventory agreed upon by either ARB or the SCAQMD, have been analyzed under CEQA and have a certified Final CEQA document, and have monitoring and enforcement components. If the proposed project is consistent with the qualifying local GHG reduction plan, it is not significant for GHG emissions. If the project is not consistent with a local GHG reduction plan, there is no approved plan, or the GHG reduction plan does not include all of the components described above, the project would move to Tier 3.
- **Tier 3** establishes a screening significance threshold level to determine significance using a 90 percent GHG emission capture rate. The 90 percent capture rate GHG significance screening level in Tier 3 for stationary sources was derived using the following methodology. Using the SCAQMD's Annual Emission Reporting (AER) Program, the reported annual natural gas consumption for 1,297 permitted facilities for 2006 through 2007 was compiled and the facilities were rank-ordered to estimate the 90th percentile of the cumulative natural gas usage for all permitted facilities. Approximately 10 percent of facilities evaluated comprise more than 90 percent of the total natural gas consumption, which corresponds to 10,000 MT of CO_2e/yr (the majority of combustion emissions comprise CO_2). At the November 5, 2009, SCAQMD Board meeting, Staff recommended the following GHG screening thresholds: Residential: 3,500 tons per year (tpy) CO_2e, Commercial: 1,400 tpy CO_2e, Mixed-use: 3,000 tpy CO_2e. If a project's GHG emissions exceed the GHG screening threshold, the project would move to Tier 4.
- **Tier 4** establishes a decision tree approach that includes compliance options for projects that have incorporated design features into the project and/or implement GHG mitigation measures.
    - Efficiency Target (2020 Targets)

[1] SCAQMD Draft Guidance Document – *Interim CEQA Greenhouse Gas Significance Threshold*. October 2008.

- 4.8 MT CO_2e per service population (SP) for project level threshold (land use emissions only) and total residual emissions not to exceed 25,000 million tons per year (mty) CO_2e
- 6.6 MT CO_2e per SP for plan level threshold (all sectors)

o Efficiency Target (2035 Targets)

- 3.0 MT CO_2e per SP for project level threshold
- 4.1 MT CO_2e per SP for plan level threshold

If a project fails to meet any of these emissions reduction targets and efficiency targets, the project would move to Tier 5.

- **Tier 5** would require projects that implement off-site GHG mitigation that includes purchasing offsets to reduce GHG emission impacts to purchase sufficient offsets for the life of the project (30 years) to reduce GHG emissions to less than the applicable GHG screening threshold level.

The proposed project would result in a significant GCC impact if it would:

- Hinder attainment of the state's goal of reducing GHG emissions to 1990 levels by 2020, as stated in the Global Warming Solutions Act of 2006. A project may be considered to help attainment of the state's goals by being consistent with an adopted statewide 2020 GHG emissions limit or the plans, programs, and regulations adopted to implement the Global Warming Solutions Act of 2006.
- Fail to achieve increased energy efficiency or reduce overall GHG emissions from an existing facility.
- Significantly increase the consumption of fuels or other energy resources, especially fossil fuels that contribute to GHG emissions when consumed.
- Exceeds the SCAQMD GHG screening threshold for mixed-use projects of 3,000 tpy CO_2e.

This analysis uses compliance with AB 32, considered a "previously approved mitigation program," as set forth in CEQA Guidelines Section 15064(h)(3) to determine if the project's incremental contribution of GHGs is a cumulatively considerable contribution to GCC. OPR's proposed draft amendment to Section 15064.7 of the CEQA Guidelines reinforces the use of this approach. CEQA Guideline Section 15064(h)(3) states three main conditions that a plan must meet to be sufficient for use as a basis for determining significance of GHG emissions. The plan must:

1. Be "a previously approved plan or mitigation program."
2. Provide "specific requirements that will avoid or substantially lessen the cumulative problem."
3. "Be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency."

AB 32 meets Conditions 1 and 3 above. Accordingly, in addition to determining whether the project's GHG emissions exceed the SCAQMD's interim mixed-use stationary source threshold to determine the significance of the project GHG emission impact on climate change, consistency or inconsistency with the reduction targets in AB 32 is also evaluated. To do so, project features that implement

specific reduction measures identified in the rules and regulations that implement AB 32 were evaluated.

GHG Emissions Background. Emissions estimates for the proposed project are discussed below. GHG emissions estimates are provided herein for informational purposes only, as there is no established quantified GHG emissions threshold. Bearing in mind that CEQA does not require "perfection" but instead "adequacy, completeness, and a good faith effort at full disclosure," the analysis below is based on methodologies and information available to the County at the time this environmental documentation was prepared. Estimation of GHG emissions in the future does not account for all changes in technology that may reduce such emissions; therefore, the estimates are based on past performance and represent a scenario that is worse than that which is likely to be encountered (after energy-efficient technologies have been implemented). While information is presented below to assist the public and the County's decision-makers in understanding the project's potential contribution to GCC impacts, the information available to the County is not sufficiently detailed to allow a direct comparison between particular project characteristics and particular climate change impacts, nor between any particular proposed mitigation measure and any reduction in climate change impacts.

Construction and operation of project development would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG emissions) occurring during the project's operation (as opposed to its construction). Typically, more than 80 percent of the total energy consumption takes place during the use of buildings, and less than 20 percent is consumed during construction.[1]

Overall, the following activities associated with the proposed project could directly or indirectly contribute to the generation of GHG emissions.

- **Removal of Vegetation:** The net removal of vegetation for construction results in a loss of the carbon sequestration in plants. However, planting of additional vegetation would result in additional carbon sequestration and would lower the carbon footprint of the project.
- **Construction Activities:** During construction of the project, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment.
- **Gas, Electric, and Water Use:** Natural gas use results in the emissions of two GHGs: CH_4 (the major component of natural gas) and CO_2 from the combustion of natural gas. Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. California's water conveyance system is energy intensive. Preliminary estimates indicate that the total energy

[1] United Nations Environment Programme (UNEP), 2007. *Buildings and Climate Change: Status, Challenges and Opportunities*, Paris, France.

used to pump and treat this water exceeds 6.5 percent of the total electricity used in the state per year.[1]

- **Solid Waste Disposal:** Solid waste generated by the project could contribute to GHG emissions in a variety of ways. Landfilling and other methods of disposal use energy for transporting and managing the waste, and they produce additional GHGs to varying degrees. Landfilling, the most common waste management practice, results in the release of CH_4 from the anaerobic decomposition of organic materials. CH_4 is 25 times more potent a GHG than CO_2. However, landfill CH_4 can also be a source of energy. In addition, many materials in landfills do not decompose fully, and the carbon that remains is sequestered in the landfill and not released into the atmosphere.
- **Motor Vehicle Use:** Transportation associated with the proposed project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.

GHG emissions associated with the project would occur over the short term from construction activities, consisting primarily of emissions from equipment exhaust. There would also be long-term regional emissions associated with project-related vehicular trips and stationary source emissions, such as natural gas used for heating. Preliminary guidance from OPR and recent letters from the Attorney General critical of CEQA documents that have taken different approaches indicate that lead agencies should calculate, or estimate, emissions from vehicular traffic, energy consumption, water conveyance and treatment, waste generation, and construction activities. The calculation presented below includes construction emissions in terms of CO_2, and annual CO_2e GHG emissions from increased energy consumption, water usage, solid waste disposal, as well as estimated GHG emissions from vehicular traffic that would result from implementation of the proposed project.

GHG emissions generated by the proposed project would predominantly consist of CO_2. In comparison to criteria air pollutants (see Section 5.7, Air Quality), such as ozone and particulate matter less than 10 microns in diameter (PM_{10}), CO_2 emissions persist in the atmosphere for a substantially longer period of time. While emissions of other GHGs, such as CH_4, are important with respect to GCC, emission levels of other GHGs are less dependent on the land use and circulation patterns associated with the proposed land use development project than are levels of CO_2.

Construction activities produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, asphalt paving, and motor vehicles transporting the construction crew. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

It is anticipated that development of the project site would require demolition of existing buildings and hauling of demolished materials. Demolition and construction of the new buildings would occur as funding becomes available in phases. Precise construction timelines are not known. The only GHG with well-studied emissions characteristics and published emissions factors for construction equipment is CO_2. Using the CalEEMod model, it is estimated that the peak daily CO_2 emissions associated with construction equipment exhaust for the proposed project would be approximately 26,000 pounds per day. Model output sheets are included in Appendix D.

[1] California Energy Commission (CEC), 2004. *Water Energy Use in California* (online information sheet) Sacramento, CA, August 24. Web site: energy.ca.gov/pier/iaw/industry/water.html. Accessed July 24, 2007.

The project would be required to implement the construction exhaust control measures listed in Section 5.7, Air Quality, including minimization of construction equipment idling and implementation of proper engine tuning and exhaust controls. Both of these measures would reduce GHG emissions during the construction period (and with other measures discussed herein, reduce GHG emissions to a less than significant level).

Architectural coatings used in construction of the project may contain volatile organic compounds (VOCs) that are similar to reactive organic gases (ROG) and are part of ozone precursors. However, there are no significant emissions of GHGs from architectural coatings.

Climate Change Impacts. Impacts of the proposed project are described in the following section. Long-term operation of the proposed project would generate GHG emissions from area and mobile sources, as well as indirect emissions from stationary sources associated with energy consumption. Mobile source emissions of GHGs would include project-generated vehicle trips associated with employee commutes and visitor and delivery vehicle trips to the project site. Area source emissions would be associated with activities such as landscaping and maintenance of proposed land uses, natural gas for heating, and other sources. Increases in stationary source emissions would also occur at off-site utility providers as a result of demand for electricity, natural gas, and water by the proposed uses.

The existing uses on site consist of jail buildings necessary to support 1,256 beds. The proposed project would increase the total capacity to 7,584 beds, an increase of 6,328 beds over existing conditions. Based on the LSA Supplemental Traffic Study (Appendix D) and federal GHG emissions factors, the GHG emission estimates presented in Tables 4.C through 4.E show the existing emissions, the emissions associated with the level of development envisioned by the proposed project, and the net increase in GHG emissions, respectively.

Table 4.C: Existing GHG Emissions

Emission Source	Emissions (MT Per Year)				
	CO_2	CH_4	N_2O	CO_2e	Percent of Total
Vehicles[1]	1,400	0.077	0.12	1,400	27%
Electricity production	2,800	0.030	0.017	2,800	54%
Natural gas combustion[1]	920	0.021	0.020	930	18%
Solid waste	--	--	--	90	1.7%
Other area sources[2]	0.46	--	--	0.46	0.009%
Total annual emissions	5,100	0.13	0.16	5,200	100%

Source: LSA Associates, Inc., March 2009.
Note: Numbers in table may not appear to add up correctly due to rounding.
[1] CO_2 emission factors from EMFAC2007.
[2] Includes emissions from landscaping equipment.
CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
GHG = greenhouse gas
MT = metric tons
N_2O = nitrous oxide

Table 4.D: Proposed Project GHG Emissions

Emission Source	Emissions (MT Per Year)				
	CO_2	CH_4	N_2O	CO_2e	Percent of Total
Vehicle[1]s	8,400	0.19	0.71	8,700	41%
Electricity production	9,400	0.10	0.057	9,400	43%
Natural gas combustion[1]	3,100	0.055	0.053	3,100	15%
Solid waste	--	--	--	300	1.4%
Other area sources[2]	0.47	--	--	0.47	0.002%
Total annual emissions	21,000	0.35	0.82	22,000	100%

Source: LSA Associates, Inc., March 2009.
Note: Numbers in table may not appear to add up correctly due to rounding.
[1] CO_2 emission factors from EMFAC2007.
[2] Includes emissions from landscaping equipment.
CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
GHG = greenhouse gas
MT = metric tons
N_2O = nitrous oxide

Table 4.E: Net Plan-Related Increase in GHG Emissions

Emission Source	Emissions (MT Per Year)				
	CO_2	CH_4	N_2O	CO_2e	Percent of Total
Vehicles[1]	7,100	0.11	0.59	7,300	46%
Electricity production	6,600	0.07	0.04	6,600	41%
Natural gas combustion[1]	2,200	0.03	0.03	2,200	12%
Solid waste	--	--	--	210	1.3%
Other area sources[2]	0.01	--	--	0.01	0%
Total annual emissions	16,000	0.22	0.66	16,000	100%

Source: LSA Associates, Inc., March 2009.
Note: Numbers in table may not appear to add up correctly due to rounding.
[1] CO_2 emission factors from EMFAC2007.
[2] Includes emissions from landscaping equipment.
CH_4 = methane
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
GHG = greenhouse gas
MT = metric tons
N_2O = nitrous oxide

Energy and Natural Gas Use. Buildings represent 39 percent of U.S. primary energy use and 70 percent of electricity consumption.[1] The proposed project would increase the demand for electricity and natural gas due to the increased building area and number of inmates and employees. The project would indirectly result in increased GHG emissions from off-site electricity generation at power plants (a portion of 6,600 MT of CO_2e/year).

[1] United States Department of Energy. 2003. *Buildings Energy Data Book.*

Water Use. Water-related energy use consumes 19 percent of California's electricity every year.[1] Energy use and related GHG emissions are based on electricity used for water supply and conveyance, water treatment, water distribution, and wastewater treatment. The project would indirectly result in increased GHG emissions from the off-site electricity generation at power plants (the remainder of 6,600 MT of CO_2e/year).

Solid Waste Disposal. The proposed project would also generate solid waste during the operation phase of the project. As described later in Section 5.15, Public Services and Utilities, average waste generation rates from a variety of sources are available from the California Integrated Waste Management Board.[2] This analysis uses an average waste generation rate of 0.007 pound per square foot per day for institutional uses. The project would indirectly result in increased GHG emissions from solid waste treatment at treatment plants (approximately 210 MT of CO_2e/year).

Mobile Sources. Mobile sources (vehicle trips and associated miles traveled) are the largest source of GHG emissions in California and represent approximately 38 percent of annual CO_2 emissions generated in the state. Like most land use development projects, vehicle miles traveled (VMT) is the most direct indicator of CO_2 emissions from the proposed project, and associated CO_2 emissions function as the best indicator of total GHG emissions. The proposed project would generate an additional 6,560 trips over current conditions.

The proposed project would generate up to 16,000 MT of CO_2e/year of new GHG emissions, as shown in Table 4.E. The emissions from vehicle exhaust would comprise approximately 46 percent of these new CO_2e emissions. The emissions from vehicle exhaust are controlled by the state and federal governments and are outside the control of the County.

The remaining GHG emissions are primarily associated with building heating systems and increased regional power plant electricity generation due to the project's electrical demands. Specific development projects proposed under the project would comply with existing state and federal regulations regarding the energy efficiency of buildings, appliances, and lighting, which would reduce the project's electricity demand. The new buildings constructed in accordance with current energy efficiency standards would be more energy-efficient than the older industrial buildings that currently exist on site. Beginning on January 1, 2011, several new Building Codes were enforced in California. All structures other than one- and two-family dwellings and townhomes will be built under the new 2010 California Building Code (CBC) to improve public health, safety, and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices.

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1 California, State of, 2005. California Energy Commission. California's Water-Energy Relationship. November.

2 California Integrated Waste Management Board, 2009. *Estimated Solid Waste Generation Rates for Commercial Establishments.* Available at http://www.ciwmb.ca.gov/wastechar/wastegenrates/Commercial.htm.

At present, there is a federal ban on chlorofluorocarbons (CFCs); therefore, it is assumed the project would not generate emissions of CFCs. The project may emit a small amount of HFC emissions from leakage and service of refrigeration and air conditioning equipment and from disposal at the end of the life of the equipment. However, the details regarding refrigerants to be used on site are unknown at this time. PFCs and SF_6 are typically used in industrial applications, none of which would be used on site. Therefore, it is not anticipated that the project would contribute significant emissions of these additional GHGs.

Impact GCC-1: Implementation of the project could result in greenhouse gas emission levels that would substantially conflict with implementation of the greenhouse gas reduction goals under AB 32 or other state regulations.

As shown earlier in Table 4.E, the total GHG emissions of 16,000 tpy of CO_2e from the proposed project will be higher than the SCAQMD interim tiered GHG emissions threshold for mixed-use projects of 3,000 tpy of CO_2e (Tier 3), but would be below the 25,000 mty CO_2e residual emissions (Tier 4). This emissions level is also unlikely to result in GHG emission levels that would substantially conflict with implementation of the GHG reduction goals under AB 32 or other state regulations. The CalEPA CAT and the ARB have developed several reports to achieve the Governor's GHG targets that rely on voluntary actions of California businesses, local government and community groups, and state incentive and regulatory programs. These include the CAT's 2006 "*Report to Governor Schwarzenegger and the Legislature*," ARB's 2007 "*Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California*," and ARB's "*Climate Change Proposed Scoping Plan: a Framework for Change.*"

The reports identify strategies to reduce California's emissions to the levels proposed in EO S-3-05 and AB 32 that are applicable to the proposed project. The Proposed Scoping Plan is the most recent document, and the strategies included in the Scoping Plan that apply to the project are contained in Table 4.F, which also summarizes the extent to which the project would comply with the strategies to help California reach the emission reduction targets.

The strategies listed in Table 4.F are either part of the project, required mitigation measures, or requirements under local or state ordinances. With implementation of these strategies/measures, the project's contribution to cumulative GHG emissions would be reduced to a less than significant level.

Table 4.F: Project Compliance with GHG Emission Reduction Strategies

Strategy	Project Compliance
Energy Efficiency Measures	
Energy Efficiency Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts including new technologies, and new policy and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California (including both investor-owned and publicly owned utilities). **Renewables Portfolio Standard** Achieve a 33 percent renewable energy mix statewide. **Green Building Strategy** Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	**Compliant with Mitigation Incorporated.** The proposed project would be required to comply with the updated Title 24 standards for building construction. In addition, the project would be required to comply with the requirements of Mitigation Measure GCC-1, identified below, including measures to incorporate energy-efficient building design features.
Water Conservation and Efficiency Measures	
Water Use Efficiency Continue efficiency programs and use cleaner energy sources to move and treat water. Approximately 19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce GHG emissions.	**Compliant with Mitigation Incorporated.** The project would be required to comply with the requirements of Mitigation Measure GCC-1, identified below, including measures to increase water use efficiency.
Solid Waste Reduction Measures	
Increase Waste Diversion, Composting, and Commercial Recycling, and Move Toward Zero-Waste Increase waste diversion from landfills beyond the 50 percent mandate to provide for additional recovery of recyclable materials. Composting and commercial recycling could have substantial GHG reduction benefits. In the long term, zero-waste policies that would require manufacturers to design products to be fully recyclable may be necessary.	**Compliant with Mitigation Incorporated.** Data available from the California Integrated Waste Management Board (CIWMB) indicate that the County has not achieved the 50 percent diversion rate since 1998. The proposed project would be required to comply with Mitigation Measure GCC-1, identified below, including measures to increase solid waste diversion, composting, and recycling.
Transportation and Motor Vehicle Measures	
Measures to Reduce High Global Warming Potential (GWP) Gases. ARB has identified Discrete Early Action measures to reduce GHG emissions from the refrigerants used in car air conditioners, semiconductor manufacturing, and consumer products. ARB has also identified potential reduction opportunities for future commercial and industrial refrigeration, changing the refrigerants used in auto air conditioning systems, and ensuring that existing car air conditioning systems do not leak.	**Compliant.** New products used, sold, or serviced on site (after implementation of the reduction of GWP gases) would comply with future ARB rules and regulations.
Vehicle Climate Change Standards. AB 1493 (Pavley) required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of GHG emissions from passenger	**Compliant.** The project does not involve the manufacture of vehicles. However, passenger, light-, medium-, and heavy-duty vehicles that are purchased and used within the project

Table 4.F: Project Compliance with GHG Emission Reduction Strategies

Strategy	Project Compliance
vehicles and light-duty trucks. Regulations were adopted by the ARB in September 2004. **Light-Duty Vehicle Efficiency Measures.** Implement additional measures that could reduce light-duty GHG emissions. For example, measures to ensure that tires are properly inflated can both reduce GHG emissions and improve fuel efficiency. **Adopt Heavy- and Medium-Duty Fuel and Engine Efficiency Measures.** Regulations to require retrofits to improve the fuel efficiency of heavy-duty trucks that could include devices that reduce aerodynamic drag and rolling resistance. This measure could also include hybridization of and increased engine efficiency of vehicles. **Low Carbon Fuel Standard.** ARB identified this measure as a Discrete Early Action Measure. This measure would reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020.	site would comply with any vehicle and fuel standards that the ARB adopts.
Regional Transportation-Related Greenhouse Gas Targets. Develop regional GHG emissions reduction targets for passenger vehicles. Local governments will play a significant role in the regional planning process to reach passenger vehicle GHG emissions reduction targets. Local governments have the ability to directly influence both the siting and design of new residential and commercial developments in a way that reduces GHGs associated with vehicle travel.	**Compliant.** Specific regional emission targets for transportation emissions do not directly apply to this project; regional GHG reduction target development is outside the scope of this project. The project will comply with any plans developed by the City and County.

Source: LSA Associates, Inc., 2011.

In order to ensure that the proposed project complies with and would not conflict with or impede the implementation of reduction goals identified in AB 32, the Governor's EO S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor, the following mitigation measure shall be implemented. Many of the individual elements of this measure are already included as part of the proposed project or are required as part of project-specific mitigation measures recommended throughout this EIR.

Mitigation Measure GCC-1

To the extent feasible, and to the satisfaction of the Orange County Sheriff's Department in consultation with Orange County Public Works (OCPW), the following measures shall be incorporated into the design and construction of the project (including specific building projects):

Construction and Building Materials

- Use locally produced and/or manufactured building materials for construction of the project;
- Recycle/reuse demolished construction material; and
- Use "Green Building Materials," such as those materials that are resource-efficient and recycled and manufactured in an environmentally friendly way, including low Volatile Organic Compound (VOC) materials.

Energy-Efficiency Measures

- Design all project buildings to exceed California Building Code's Title 24 energy standard, including but not limited to any combination of the following:
  - Increase insulation such that heat transfer and thermal bridging is minimized;
  - Limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption; and
  - Incorporate ENERGY STAR or better rated windows, space heating and cooling equipment, light fixtures, appliances or other applicable electrical equipment. Design, construct and operate all newly constructed and renovated buildings and facilities as equivalent to "Leadership in Energy and Environmental Design (LEED)" certified buildings where feasible.
- Develop an On-Site Renewable Energy System that consists of solar, wind, geothermal, biomass, and/or bio-gas strategies. This system should reduce grid-based energy purchases and provide at least 2.5 percent[1] of the project energy cost from renewable energy. Such a strategy can include installation of photovoltaic panels, wind turbines, and solar and tankless hot water heaters;
- Provide a landscape and development plan for the project that takes advantage of shade, prevailing winds, and landscaping;
- Install efficient lighting and lighting control systems. Use daylight as an integral part of lighting systems in buildings;
- Install light-colored "cool" roofs and cool pavements;
- Install energy-efficient heating and cooling systems, appliances and equipment, and control systems; and
- Install solar or light-emitting diodes (LEDs) for outdoor lighting.

[1] Based on U.S. Green Building Council, LEED, 2005. *Green Building Rating System for New Construction & Major Renovations. Version 2.2.* October.

Water Conservation and Efficiency Measures

- Devise a comprehensive water conservation strategy appropriate for the project and location. The strategy may include the following, plus other innovative measures that might be appropriate:
    - Create water-efficient landscapes within the development;
    - Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls;
    - Use reclaimed water for landscape irrigation within the project. Install the infrastructure to deliver and use reclaimed water;
    - Design buildings to be water-efficient. Install water-efficient fixtures and appliances, including low-flow faucets, dual-flush toilets and waterless urinals; and
    - Restrict watering methods (e.g., prohibit systems that apply water to nonvegetated surfaces) and control runoff.

Solid Waste Measures

- Reuse and recycle construction and demolition waste (including but not limited to soil, vegetation, concrete, lumber, metal, and cardboard);
- Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas; and
- Provide employee education about reducing waste and available recycling services.

In addition, the project would also be subject to all applicable regulatory requirements, which would also reduce the greenhouse gas (GHG) emissions of the project. After implementation of Mitigation Measure GCC-1 and application of regulatory requirements, the project would implement appropriate GHG reduction strategies and would not conflict with or impede implementation of reduction goals identified in Assembly Bill (AB) 32, the Governor's Executive Order (EO) S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor. Therefore, the project's contribution to cumulative GHG emissions would be reduced to a less than significant level.

4.3.4 Impacts to the Proposed Project from Global Climate Change

Local temperatures could increase in time as a result of GCC, with or without development as envisioned by the project. This increase in temperature could lead to other climate effects, including but not limited to increased flooding due to increased precipitation and runoff and a reduction in the Sierra snowpack. At present, the extent of climate change impacts is uncertain, and more extensive monitoring of runoff and snowpack is necessary for greater understanding of changes in hydrologic patterns. Studies indicate that increased temperatures could result in a greater portion of peak streamflows occurring earlier in the spring, with decreases in late spring and early summer.[1] These

[1] U.S. Global Change Research Program. 2001. Climate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change.

changes could have implications for water supply, flood management, and ecosystem health. However, there is insufficient information available to make a significance determination.

4.3.5 Level of Significance After Mitigation

After implementation of Mitigation Measure GCC-1 and application of regulatory requirements, the project would implement appropriate GHG reduction strategies and would not conflict with or impede implementation of reduction goals identified in AB 32, the Governor's EO S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor. Therefore, the project's contribution to cumulative GHG emissions would be reduced to a less than significant level.